SounPacific
Environmental Services
(707) 269-0884

QUARTERLY GROUNDWATER MONITORING REPORT

First Quarter 2005 (Eleventh Quarterly)

Sampled on January 23, 2005

Job # SP-150

LOP # 12170

April 8, 2005

Big Oil & Tire - Glendale BP Mini Mart (Glendale 76)
1497 Glendale Road
Arcata, California 95521

This *Quarterly Groundwater Monitoring Report* was prepared by SounPacific staff for Big Oil & Tire Co. (BO&T), using previous studies that were conducted by Clearwater Group, Inc. (CGI) and file review conducted at Humboldt County Department of Health and Human Services: Division of Environmental Health (HCDEH). The station is located at 1497 Glendale Road, in Arcata, California (Figure 1).

SITE DESCRIPTION

The subject property consists of a single story building with an attached storage building. Surfaces on the site consist of concrete, asphalt, gravel, and vegetation. The main structure is positioned in the center of the property with the entrance to the building facing south towards Glendale Road. A second storage building is located next to the eastern property line in the southern portion of the property (Figure 2).

Four (4) 4,000-gallon underground storage tanks (USTs) that were previously used for storage of three (3) grades of unleaded gasoline were removed along with the entire UST system. The site is serviced by public utilities. Surface water flows into storm drains (Figure 2).

SITE TOPOGRAPHY AND LAND USE

The subject property was previously used as a retail gas station and mini-mart. The property is currently vacant. The site is located approximately 1,200 feet north of the Mad River and approximately 96 feet above mean sea level (MSL). The site is located in an area of low topographic relief (Figure 1). Surrounding land use in the immediate vicinity is rural with an interspersion of commercial and residential properties. Murphy's Market resides adjacent to the west of the site. Residential properties lie directly to the east of the site. Blue Lake Forest Products lies adjacent to the north of the site. Glendale Road runs adjacent to the southern property line. A commercial storage yard lies directly to the south of the site across Glendale Road.

RESULTS OF QUARTERLY SAMPLING

A quarterly groundwater monitoring program at the Glendale 76 site was implemented on July 15, 2002, and will continue until further notice. SounPacific staff is currently conducting quarterly groundwater sampling events to monitor hydrocarbon concentrations on site, and collecting quarterly water level data to document any changes in groundwater, groundwater gradient, and direction of flow. Monitoring wells were measured and sampled on January 23, 2005.

FIELD DATA

Wells: MW-1, 2, 3, and 4

Groundwater: Ranged from 85.83 to 86.30 feet above mean sea level (Table 1)

Floating product: Sheen detected in monitoring wells MW-3 and MW-4

Groundwater Gradient: 0.01 feet per foot (ft/ft)

Flow Direction: SE

On January 23, 2005, the depth to groundwater in the site's four groundwater monitoring wells ranged from 9.97 feet below top of casing (btoc) in well MW-4 to 10.62 feet btoc in well MW-2. When corrected to mean sea-level (amsl), water level elevations ranged from 85.83 feet amsl in / MW-2 to 86.30 in MW-4. Groundwater levels for the January 23, 2005 monitoring event, along with historical levels and elevations are included in Table 1. Groundwater flow on January 23, 2005 was towards the southeast at a gradient of 0.01 ft/ft. The groundwater flow and gradient are graphically depicted in Figure 3. Prior to sampling, all wells were purged; the groundwater field parameters for each well are presented below.

MONITORING WELL MW-1 GROUNDWATER FIELD PARAMETERS

Time	Total Vol. Removed/ gal	pH	Temp./ F	Cond./ ms(cm)$^{-1}$
12:49	0	6.70	60.45	0.130
12:54	1.42	6.24	60.74	0.126
12:58	2.84	6.24	60.84	0.133
1:03	4.26	6.13	60.72	0.137

MONITORING WELL MW-2 GROUNDWATER FIELD PARAMETERS

Time	Total Vol. Removed/ gal	pH	Temp./ F	Cond./ ms(cm)$^{-1}$
1:19	0	5.94	60.78	0.134
1:23	1.32	5.65	61.30	0.155
1:28	2.64	5.68	61.31	0.162
1:32	3.96	5.68	61.36	0.165

MONITORING WELL MW-3 GROUNDWATER FIELD PARAMETERS

Time	Total Vol. Removed/ gal	pH	Temp./ F	Cond./ ms(cm)$^{-1}$
1:43	0	5.69	60.03	0.039
1:47	1.48	5.68	60.39	0.038
1:52	2.60	5.65	60.46	0.039
1:57	4.44	5.62	60.71	0.045

MONITORING WELL MW-4 GROUNDWATER FIELD PARAMETERS

Time	Total Vol. Removed/ gal	pH	Temp./ F	Cond./ ms(cm)$^{-1}$
2:08	0	6.06	57.32	0.153
2:14	1.50	6.18	58.31	0.133
2:19	3.00	6.13	58.59	0.112
2:23	4.50	6.10	58.58	0.111

ANALYTICAL RESULTS

Sampling locations: MW-1, 2, 3, and 4

Analyses performed: TPHg, BTXE, MTBE, DIPE, TAME, ETBE, TBA, TPHd, TPHmo

Laboratories Used: Basic Laboratory, Inc, Redding California

The analytical results for the current groundwater monitoring event are presented below and graphically depicted in Figure 4. The laboratory report is included as Appendix A. The historical analytical results for all the monitoring wells, since the implementation of the groundwater monitoring are included as Table 2.

	MW-1	**MW-2**	**MW-3**	**MW-4**	
	(ppb)	**(ppb)**	**(ppb)**	**(ppb)**	
TPHg:	**359**	**122**	**498**	**872**	
Benzene:	**2.7**	ND < 0.5	**102**	**24.2**	
Toluene:	ND < 2.5	ND < 0.5	**7.2**	**2.3**	(ND = non-detectable)
Xylenes:	ND < 5.0	ND < 1.0	**68.9**	**109**	
Ethylbenzene:	ND < 2.5	ND < 0.5	**3.4**	**57.0**	
MTBE:	**315**	**102**	**90.6**	**312.0**	
DIPE:	ND < 2.5	ND < 0.5	ND < 0.5	ND < 1.2	
TAME:	**55.6**	**24.2**	**19.5**	**30.6**	
ETBE:	ND < 25.0	ND < 5.0	ND < 5.0	ND < 12.5	
TBA:	ND < 250	ND < 50.0	ND < 50.0	**198**	
TPHd:	**110**	ND < 50.0	ND<50	**585**	
TPHmo:	**58**	**81**	ND < 50	**52**	

COMMENTS AND RECOMMENDATIONS

On January 23, 2005, the 11th groundwater monitoring event, since the installation and initial sampling of the site's four groundwater monitoring wells in May 2002, was conducted at the Glendale 76 property at 1497 Glendale Road, California. A summary of the results are presented below:

- The depth to groundwater in the four wells onsite wells ranged between 9.97 feet bgs to 10.62 feet bgs. Groundwater flow was towards the Southeast at a gradient of 0.01 feet per foot.

- Groundwater samples from the four on-site wells were collected and analyzed for TPHg, TPHd, TPHmo, BTXE, and five-fuel oxygenates. Laboratory results reported TPHg in all wells at concentrations ranging between 122 ppb (MW-2) and 872 ppb (MW-4). Benzene was reported in three wells at concentrations ranging between 2.7 ppb (MW-1) and 102 ppb (MW-3). Toluene was reported in two wells at concentrations ranging between 2.3 ppb (MW-4) and 7.2 ppb (MW-3). Xylenes were reported in two wells at concentrations ranging between 68.9 ppb (MW-3) and 109 ppb (MW-4). Ethylbenzene was reported in two wells at concentrations ranging between 3.4 ppb (MW-3) and 57.0 ppb (MW-4). Of the fuel oxygenates, MTBE was reported in all four wells at concentrations ranging between 90.6 ppb (MW-3) and 315 ppb (MW-1), TAME was reported in all four wells at concentrations ranging between 19.5 ppb (MW-3) and 55.6 ppb (MW-1), and TBA was reported in only well MW-4, at a concentration of 198 ppb. No other fuel oxygenates were reported. Laboratory results reported TPHd in two wells at concentrations ranging between 110 ppb (MW-1) and 585 ppb (MW-4), and TPHmo in three wells at concentrations ranging between 52 ppb (MW-4) and 81 ppb (MW-2).

Based upon these results the following observations and conclusions have been made:

- Detectable levels of TPHg in well MW-1 have been reported during six of the sites twelve sampling events. TPHg has consistently been reported in the remaining three wells, particularly in wells MW-3 and MW-4, where the highest concentrations have been reported. In wells MW-2 and MW-3, TPHg concentrations have generally decreasing over time, but in well MW-4, the concentrations has remained relatively consistent. See Figures 5 through 8.

- Since the implementation of groundwater monitoring, BTXE compounds have been reported during different monitoring events in all wells. Benzene has consistently been reported in wells MW-3 and MW-4. In the same wells; toluene, xylenes, and ethylbenzene have historically been reported, but their presence has been inconsistent. BTXE levels in wells MW-1 and MW-2 have been inconsistent, but when present, the levels have been low. See Figures 5 through 8.

- MTBE was present in all wells during the last monitoring event, and has consistently been present since the inception of groundwater monitoring. In general, there has been a general decrease in MTBE levels in wells MW-1, MW-2 and MW-3 over time. See Figures 5 through 8.

- TAME was present in all wells during the last monitoring event, and has consistently been present since the inception of groundwater monitoring. Over time, concentrations of TAME have generally reported a decrease in all wells. During the recent monitoring event, TAME levels in wells MW-1, MW-2, and MW-3 have demonstrated a significant increase, when compared to the levels during previous monitoring events.

- TBA was not reported in any of the site's wells during the initial monitoring events. However, since January 2003, TBA has been reported approximately 25% of the time, with the highest concentrations being reported in monitoring well MW-4, which was the only well to report its presences during the latest monitoring event.

- DIPE and ETBE have not been reported in any wells since the inception of the groundwater monitoring.

- TPHd was present in two wells during the January 2005 monitoring event. The TPHd level in well MW-4 has decreased since the last quarterly sampling event. See Figures 5 through 8.

- TPHmo was reported in three wells for the first time since the inception of the groundwater monitoring during the recent sampling event, probably due to the decrease in lab reporting levels from 500 ppb to 50 ppb.

Based on the results of the January 2005 monitoring event and historical results, the following future activities are proposed:

- Groundwater monitoring will be continued until further notice. Groundwater level measurements will be collected from the four on-site monitoring wells to determine groundwater flow direction and gradient. Collected groundwater samples will be analyzed for TPHg, TPHd, TPHmo, BTXE, and five fuel oxygenates/additives.

- After HCDEH approval of the Excavation Report of Findings, SounPacific will submit the requested Workplan Addendum to investigate soil and groundwater contamination down gradient of MW-1 and B-12 by installing borings instead of monitoring wells, as requested in the HCDEH letter dated October 8, 2003.

CERTIFICATION

This report was prepared under the direct supervision of a California registered geologist at SounPacific. All information provided in this report including statements, conclusions and recommendations are based solely upon field observations and analyses performed by a state-certified laboratory. SounPacific is not responsible for laboratory errors.

SounPacific promises to perform all its work in a manner that is currently used by members in similar professions working in the same geographic area. SounPacific will do what ever is reasonable to ensure that data collection is accurate. Please note however, that rain, buried utilities, and other factors can influence groundwater depths, directions and other factors beyond what SounPacific could reasonably determine.

SounPacific

Prepared by:

Greg Sounhein, REA # 07994

Project Manager

Reviewed by:

Michael Sellens, RG # 4714, REA # 07890

Principal Geologist

ATTACHMENTS

TABLES & CHART

Table 1: Water Levels

Table 2: Groundwater Analytical Results

Chart 1: Hydrograph

FIGURES

Figure 1: Aerial / Topo Map

Figure 2: Site Plan

Figure 3: Groundwater Gradient Map January 2005

Figure 4: Groundwater Analytical Results

Figure 5: MW-1 Hydrocarbon Concentrations vs. Time

Figure 6: MW-2 Hydrocarbon Concentrations vs. Time

Figure 7: MW-3 Hydrocarbon Concentrations vs. Time

Figure 8: MW-4 Hydrocarbon Concentrations vs. Time

APPENDICES

Appendix A: Laboratory Report and Chain-of-Custody Form

Appendix B: Standard Operating Procedures

Appendix C: Field Notes

Tables & Chart

Table 1
Water Levels
Glendale 76
1497 Glendale Road
Arcata, California 95521

Sample Location	Date	Depth to Bottom/ Feet BGS	Survey Height/ Feet Above MSL	Depth to Water/ Feet BGS	Adjusted Elevation/ Feet Above MSL	Thickness of Floating Product/ Feet
MW-1	5/3/2002	19.08	96.47	12.25	84.22	0.00
	6/10/2002	19.22	96.47	13.91	82.56	0.00
	7/12/2002	19.40	96.47	15.58	80.89	0.00
	8/17/2002	18.99	96.47	16.45	80.02	0.00
	9/11/2002	18.97	96.47	16.71	79.76	0.00
	10/11/2002	18.98	96.47	16.92	79.55	0.00
	11/15/2002	18.99	96.47	16.76	79.71	0.00
	12/16/2002	19.29	96.47	14.94	81.53	0.00
	1/12/2003	18.99	96.47	8.74	87.73	0.00
	2/14/2003	18.99	96.47	10.90	85.57	0.00
	3/17/2003	19.29	96.47	11.17	85.30	0.00
	4/12/2003	18.99	96.47	8.89	87.58	0.00
	7/14/2003	19.17	96.47	15.09	81.38	0.00
	10/21/2003	19.17	96.47	17.02	79.45	0.00
	1/16/2004	19.17	96.47	9.44	87.03	0.00
	4/23/2004	19.17	96.47	12.02	84.45	0.00
	7/31/2004	19.18	96.47	15.15	81.32	0.00
	10/30/2004	18.90	96.47	14.51	81.96	0.00
	1/23/2005	19.19	96.47	10.33	86.14	0.00
MW-2	5/3/2002	19.15	96.45	12.65	83.80	0.00
	6/10/2002	19.02	96.45	14.30	82.15	0.00
	7/12/2002	19.00	96.45	15.95	80.50	0.00
	8/17/2002	18.86	96.45	16.50	79.95	0.00
	9/11/2002	18.90	96.45	16.79	79.66	0.00
	10/11/2002	18.84	96.45	17.01	79.44	0.00
	11/15/2002	18.87	96.45	16.86	79.59	0.00
	12/16/2002	19.14	96.45	15.35	81.10	0.00
	1/12/2003	18.89	96.45	9.16	87.29	0.00
	2/14/2003	18.91	96.45	11.12	85.33	0.00
	3/17/2003	19.14	96.45	11.47	84.98	0.00
	4/12/2003	18.89	96.45	9.24	87.21	0.00
	7/14/2003	19.04	96.45	15.26	81.19	0.00
	10/21/2003	19.04	96.45	17.10	79.35	0.00
	1/16/2004	19.04	96.45	9.78	86.67	0.00
	4/23/2004	19.04	96.45	12.31	84.14	0.00
	7/31/2004	18.99	96.45	15.29	81.16	0.00
	10/30/2004	18.60	96.45	14.71	81.74	0.00
	1/23/2005	18.90	96.45	10.62	85.83	0.00

Table 1 (cont.)
Water Levels
Glendale 76
1497 Glendale Road
Arcata, California 95521

Sample Location	Date	Depth to Bottom/ Feet BGS	Survey Height/ Feet Above MSL	Depth to Water/ Feet BGS	Adjusted Elevation/ Feet Above MSL	Thickness of Floating Product/ Feet
MW-3	5/3/2002	19.22	96.08	12.20	83.88	0.00
	6/10/2002	19.20	96.08	13.70	82.38	0.00
	7/12/2002	19.21	96.08	15.20	80.88	0.00
	8/17/2002	19.04	96.08	16.04	80.04	0.00
	9/11/2002	19.10	96.08	16.28	79.80	0.00
	10/11/2002	19.02	96.08	16.48	79.60	0.00
	11/15/2002	19.20	96.08	16.40	79.68	0.00
	12/16/2002	19.45	96.08	11.59	84.49	0.00
	1/12/2003	19.17	96.08	8.46	87.62	0.00
	2/14/2003	19.17	96.08	10.81	85.27	0.00
	3/17/2003	19.45	96.08	10.98	85.10	0.00
	4/12/2003	19.17	96.08	8.64	87.44	0.00
	7/14/2003	19.37	96.08	14.76	81.32	0.00
	10/21/2003	19.37	96.08	16.61	79.47	0.00
	1/16/2004	19.37	96.08	9.21	86.87	0.00
	4/23/2004	19.37	96.08	11.74	84.34	0.00
	7/31/2004	19.44	96.08	14.72	81.36	0.00
	10/30/2004	19.13	96.08	14.21	81.87	0.00
	1/23/2005	19.43	96.08	10.18	85.90	0.00
MW-4	5/3/2002	19.15	96.27	11.84	84.43	0.00
	6/10/2002	19.13	96.27	13.46	82.81	0.00
	7/12/2002	19.10	96.27	15.08	81.19	0.00
	8/17/2002	19.00	96.27	16.04	80.23	0.00
	9/11/2002	19.00	96.27	16.33	79.94	0.00
	10/11/2002	19.00	96.27	16.50	79.77	0.00
	11/15/2002	19.12	96.27	16.41	79.86	0.00
	12/16/2002	19.30	96.27	13.25	83.02	0.00
	1/12/2003	19.07	96.27	8.21	88.06	0.00
	2/14/2003	19.11	96.27	10.53	85.74	0.00
	3/17/2003	13.25	96.27	10.64	85.63	0.00
	4/12/2003	19.07	96.27	8.37	87.90	0.00
	7/14/2003	19.27	96.27	14.69	81.58	0.00
	10/21/2003	19.27	96.27	16.67	79.60	0.00
	1/16/2004	19.27	96.27	8.95	87.32	0.00
	4/23/2004	19.27	96.27	11.51	84.76	0.00
	7/31/2004	19.36	96.27	14.70	81.57	0.00
	10/30/2004	19.07	96.27	14.15	82.12	0.00
	1/23/2005	19.35	96.27	9.97	86.30	0.00

Notes:
Bgs: Below Ground Surface
MSL: Mean Sea Level

Table 2
Groundwater Analytical Results

Glendale 76
1497 Glendale Road
Arcata, California 95521

Sample Location	Sample Event	Annual Quarter	Sample Date	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Xylenes (ppb)	Ethylbenzene (ppb)	MTBE (ppb)	DIPE (ppb)	TAME (ppb)	ETBE (ppb)	TBA (ppb)	TPHd (ppb)	TPHmo (ppb)
MW-1	Well Installation	Second Quarter	5/3/2002	**8,605**	**2.9**	ND < 0.3	ND < 0.6	ND < 0.3	**3,270**	ND < 0.5	**559**	ND < 0.5	ND < 100	NT	NT
	First Quarterly	Third Quarter	7/12/2002	**345**	**0.9**	ND < 0.3	ND < 0.6	ND < 0.3	**257**	ND < 0.5	**53.4**	ND < 0.5	ND < 100	NT	NT
	Second Quarterly	Fourth Quarter	10/11/2002	ND < 1,000	ND < 6.0	ND < 6.0	ND < 12.0	ND < 6.0	**200**	ND < 10	**38.6**	ND < 10	ND < 2,000	ND < 50	ND < 50
	Third Quarterly	First Quarter	1/12/2003	**5,900**	**18**	**0.7**	**92**	**1.0**	**1,100**	ND < 0.5	**160**	ND < 0.5	**120**	**240**	ND < 500
	Fourth Quarterly	Second Quarter	4/12/2003	**420**	**8.7**	ND < 0.5	**10**	**0.9**	**1,000**	ND < 0.5	**130**	ND < 0.5	**130**	ND < 50	ND < 500
	Fifth Quarterly	Third Quarter	7/14/2003	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	**79**	ND < 0.5	**15**	ND < 0.5	ND < 5.0	ND < 50	ND < 500
	Sixth Quarterly	Fourth Quarter	10/21/2003	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	**20**	ND < 0.5	**4.0**	ND < 0.5	ND < 5.0	ND < 50	ND < 500
	Seventh Quarterly	First Quarter	1/16/2004	**190**	**3.6**	ND < 0.5	**12**	**1.4**	**450**	ND < 0.5	**71**	ND < 0.5	**21**	ND < 50	ND < 500
	Eighth Quarterly	Second Quarter	4/23/2004	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	**31**	ND < 0.5	**7.6**	ND < 0.5	ND < 5.0	ND < 50	ND < 500
	Ninth Quarterly	Third Quarter	7/31/2004	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	**19**	ND < 0.5	**3.9**	ND < 0.5	ND < 5.0	ND < 50	ND < 500
	Tenth Quarterly	Fourth Quarter	10/30/2004	ND < 50	ND < 0.5	**1.1**	ND < 1.0	ND < 0.5	**18**	ND < 0.5	**4.3**	ND < 0.5	ND < 5.0	**92**	ND < 500
	Eleventh Quarterly	first Quarter	1/23/2005	**359**	**2.7**	ND < 2.5	ND < 5.0	ND < 2.5	**315**	ND <2.5	**55.6**	ND <25.0	ND <250	**110**	**58**
MW-2	Well Installation	Second Quarter	5/3/2002	**1,860**	**28.8**	**0.9**	**1.4**	**0.6**	**1,060**	ND < 0.5	**204**	ND < 0.5	ND < 100	NT	NT
	First Quarterly	Third Quarter	7/12/2002	**684**	**10.5**	ND < 0.3	**3.8**	ND < 0.3	**422**	ND < 0.5	**100**	ND < 0.5	ND < 100	NT	NT
	Second Quarterly	Fourth Quarter	10/11/2002	ND < 1,000	ND < 6.0	ND < 6.0	ND < 12.0	ND < 6.0	**144**	ND < 10	**27.0**	ND < 10	ND < 2,000	ND < 50	ND < 50
	Third Quarterly	First Quarter	1/12/2003	**490**	**35**	ND < 0.5	**10.7**	ND < 0.5	**640**	ND < 0.5	**110**	ND < 0.5	**79**	**60**	ND < 500
	Fourth Quarterly	Second Quarter	4/12/2003	**180**	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	**240**	ND < 0.5	**49**	ND < 0.5	ND < 5.0	ND < 50	ND < 500
	Fifth Quarterly	Third Quarter	7/14/2003	**170**	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	**310**	ND < 0.5	**59**	ND < 0.5	**59**	ND < 50	ND < 500
	Sixth Quarterly	Fourth Quarter	10/21/2003	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	**16**	ND < 0.5	**3.0**	ND < 0.5	ND < 5.0	ND < 50	ND < 500
	Seventh Quarterly	First Quarter	1/16/2004	**120**	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	**160**	ND < 0.5	**30**	ND < 0.5	**18**	ND < 50	ND < 500
	Eighth Quarterly	Second Quarter	4/23/2004	ND < 500	ND < 5.0	ND < 5.0	ND < 10.0	ND < 5.0	**180**	ND < 5.0	**40**	ND < 5.0	ND < 50	ND < 50	ND < 500
	Ninth Quarterly	Third Quarter	7/31/2004	**73**	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	**86**	ND < 0.5	**19**	ND < 0.5	ND < 5.0	ND < 50	ND < 500
	Tenth Quarterly	Fourth Quarter	10/30/2004	**71**	ND < 0.5	**0.7**	ND < 1.0	ND < 0.5	**50**	ND < 0.5	**10**	ND < 0.5	ND < 5.0	ND < 50	ND < 500
	Eleventh Quarterly	First Quarter	1/23/2005	**122**	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	**102**	ND < 0.5	**24.2**	ND < 5.0	ND < 50.0	ND < 50	**81**
MW-3	Well Installation	Second Quarter	5/3/2002	**8,900**	**387**	**378**	**743**	**352**	**1,080**	ND < 0.5	**37.2**	ND < 0.5	ND < 100	NT	NT
	First Quarterly	Third Quarter	7/12/2002	**5,720**	**376**	**94.3**	**258**	**230**	**1,240**	ND < 5.0	**285**	ND < 5.0	ND < 1,000	NT	NT
	Second Quarterly	Fourth Quarter	10/11/2002	ND < 5,000	**318**	ND < 30.0	ND < 60.0	ND < 30.0	**1,270**	ND < 100	**369**	ND < 100	ND < 10,000	**381**	ND < 50
	Third Quarterly	First Quarter	1/12/2003	**1,100**	**19**	**62**	**48**	**18**	**38**	ND < 0.5	**8.8**	ND < 0.5	ND < 5.0	**110**	ND < 500
	Fourth Quarterly	Second Quarter	4/12/2003	**300**	**21**	**45**	**30.4**	**14**	**34**	ND < 0.5	**9.2**	ND < 0.5	ND < 5.0	ND < 50	ND < 500
	Fifth Quarterly	Third Quarter	7/14/2003	**2,000**	**170**	**11**	**44**	**58**	**330**	ND < 5.0	**97**	ND < 5.0	ND < 50	**210**	ND < 500
	Sixth Quarterly	Fourth Quarter	10/21/2003	**690**	**42**	ND < 5.0	ND < 10.0	ND < 5.0	**230**	ND < 5.0	**58**	ND < 5.0	ND < 50	**74**	ND < 500
	Seventh Quarterly	First Quarter	1/16/2004	**150**	**5.2**	**12**	**9.2**	**5.9**	**6.6**	ND < 0.5	**2.1**	ND < 0.5	ND < 5.0	ND < 50	ND < 500
	Eighth Quarterly	Second Quarter	4/23/2004	ND < 50	**0.5**	ND < 0.5	**0.7**	**0.7**	**1.5**	ND < 0.5	ND < 0.5	ND < 0.5	ND < 5.0	ND < 50	ND < 500
	Ninth Quarterly	Third Quarter	7/31/2004	**700**	**7.6**	ND < 0.5	ND < 1.0	**2.4**	**110**	ND < 0.5	**35**	ND < 0.5	**42**	**110**	ND < 500
	Tenth Quarterly	Fourth Quarter	1/27/2005	**1,000**	**14**	**9.8**	**14**	**8.8**	**23**	ND < 0.5	**6.9**	ND < 0.5	ND < 5.0	**130**	ND < 500
	Eleventh Quarterly	First Quarter	1/23/2005	**498**	**102**	**7.2**	**68.9**	**3.4**	**90.6**	ND < 0.5	**19.5**	ND < 5.0	ND < 50.0	ND<50	ND < 50
MW-4	Well Installation	Second Quarter	5/3/2002	**3,150**	**138**	**40**	**124**	**49.5**	**1,050**	ND < 0.5	**131**	ND < 0.5	NT	NT	NT
	First Quarterly	Third Quarter	7/12/2002	**2,850**	**256**	**17.5**	**181**	**167**	**1,820**	ND < 0.5	**241**	ND < 0.5	ND < 100	NT	NT
	Second Quarterly	Fourth Quarter	10/11/2002	**1,520**	**117**	ND < 0.3	**111**	**66.7**	**732**	ND < 5.0	**115**	ND < 5.0	ND < 1,000	ND < 50	ND < 50
	Third Quarterly	First Quarter	1/12/2003	**16,000**	**220**	**170**	**1,900**	**340**	**1,500**	ND < 50	**160**	ND < 50	ND < 500	**3,000**	ND < 500
	Fourth Quarterly	Second Quarter	4/12/2003	ND < 1,000	**210**	**180**	**1,320**	**430**	**1,100**	ND < 50	**130**	ND < 50	ND < 500	**3,800**	ND < 500
	Fifth Quarterly	Third Quarter	7/14/2003	**770**	**33**	ND < 5.0	**17**	**20**	**180**	ND < 5.0	**29**	ND < 5.0	ND < 50	**63**	ND < 500
	Sixth Quarterly	Fourth Quarter	10/21/2003	**970**	**80**	ND < 5.0	**7.8**	**21**	**540**	ND < 5.0	**85**	ND < 5.0	ND < 50	**260**	ND < 500
	Seventh Quarterly	First Quarter	1/16/2004	**4,200**	**90**	**29**	**710**	**220**	**550**	ND < 5.0	**73**	ND < 5.0	**420**	ND < 50	ND < 500
	Eighth Quarterly	Second Quarter	4/23/2004	**1,300**	**26**	ND < 5.0	**79**	**34**	**170**	ND < 5.0	**27**	ND < 5.0	**170**	**150**	ND < 500
	Ninth Quarterly	Third Quarter	7/31/2004	**78**	**2.9**	ND < 0.5	ND < 1	**1.1**	**12**	ND < 0.5	**1.9**	ND < 0.5	ND < 5.0	ND < 50	ND < 500
	Tenth Quarterly	Fourth Quarter	10/30/2004	**8,800**	**230**	**32**	**1,600**	**650**	**940**	ND < 5.0	**200**	ND < 5.0	**640**	**1,500**	ND < 500
	Eleventh Quarterly	First Quarter	1/23/2005	**872**	**24.2**	**2.3**	**109**	**57.0**	**312.0**	ND <1.2	**30.6**	ND < 12.5	**198**	**585**	**52**

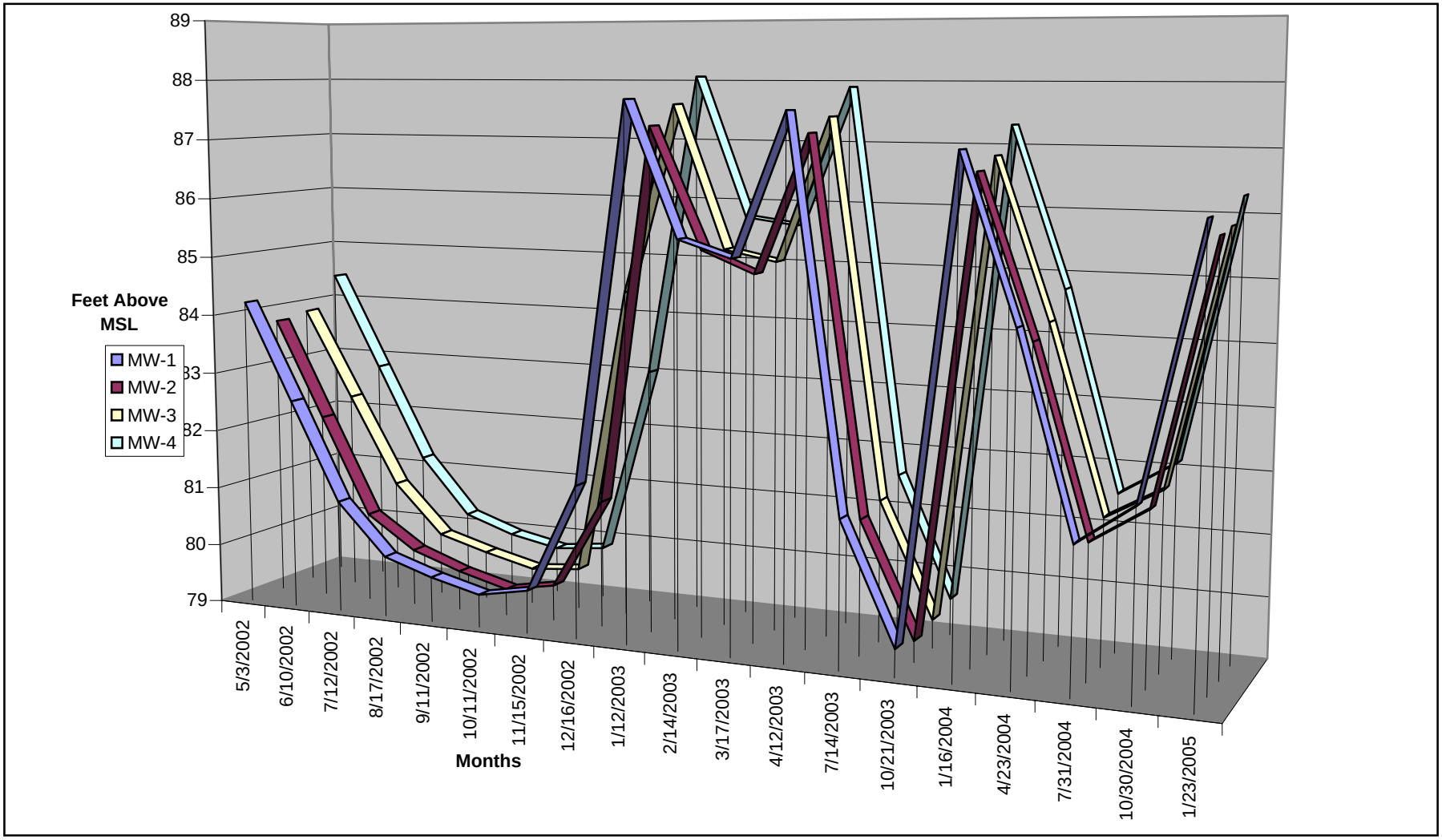
notes:

TPHg: Total Petroleum Hydrocarbons as gasoline
MTBE: Methyl tertiary butyl ether
DIPE: Diisopropyl Ether
TPHd: Total Petroleum Hydrocarbons as diesel
TAME: Tertiary amyl methyl ether
TBA: Tertiary butanol
ETBE: Ethyl tertiary butyl ether
ppb: parts per billion = µg/l = .001 mg/l = 0.001 ppm
TPHmo: Total petroleum hydrocarbons as motor oil
ND: Not detected. Sample was detected at or below the method detection limit as shown.

Chart 1

Monthly Hydrograph

Glendale 76
1497 Glendale Road
Arcata, California



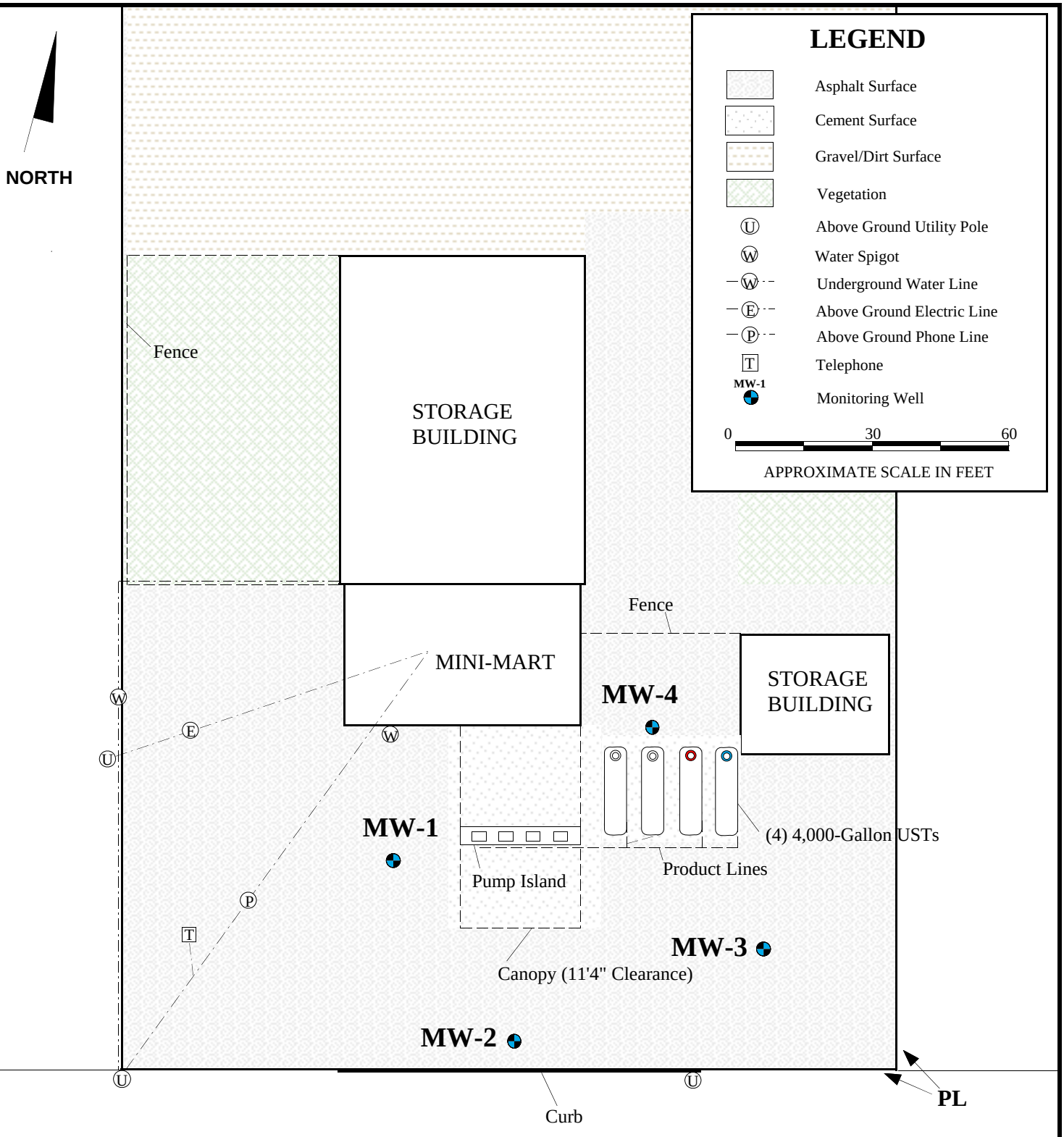
Figures

SunPacific Environmental Services
(707) 269-0884

AERIAL/TOPO MAP

Glendale 76
1497 Glendale Road
Arcata, California 95521

Project No.	Report Date	Figure
SP-150	4/8/05	1

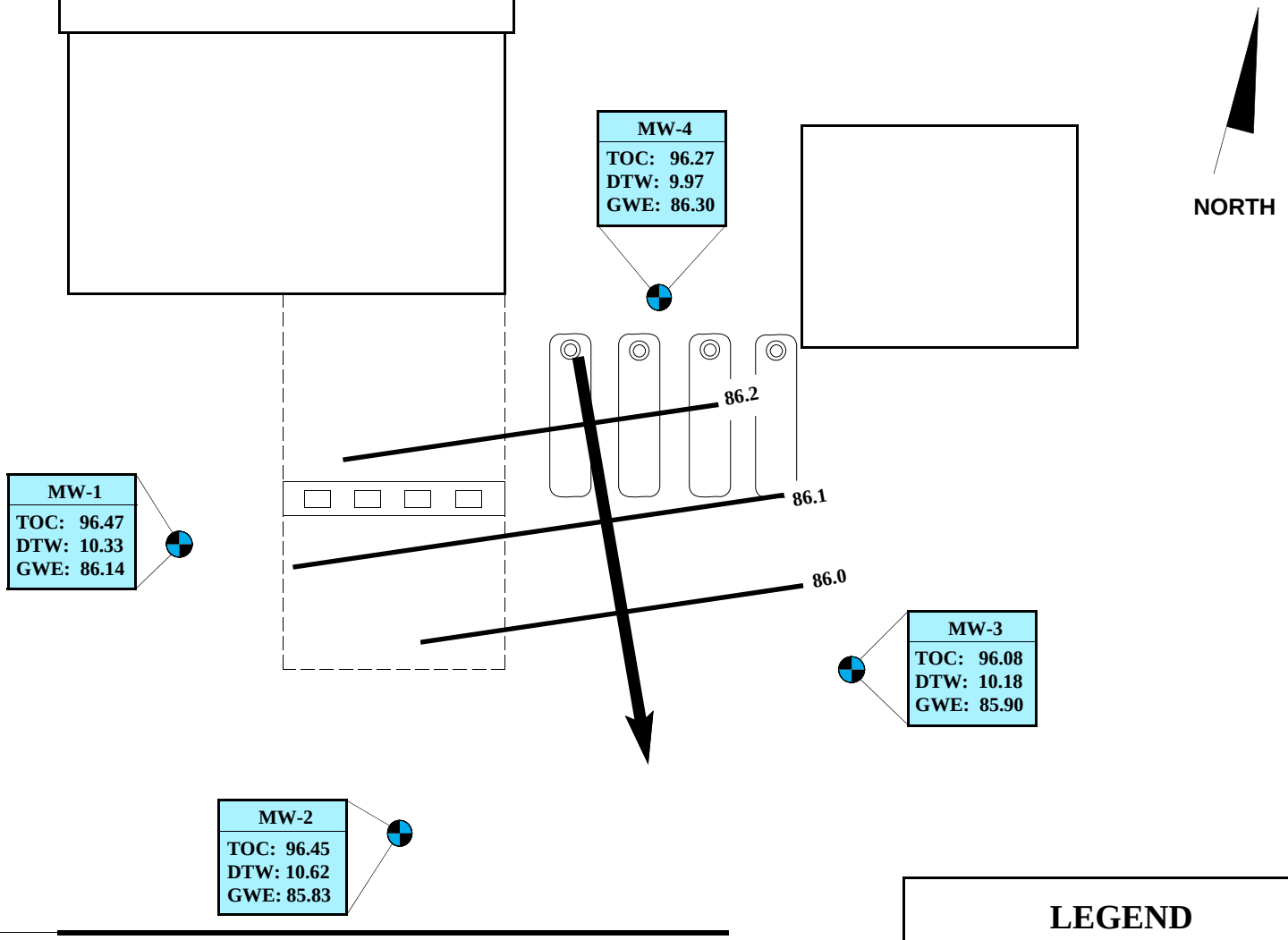


Environmental Services

SITE PLAN

Figure 2

Glendale 76 1497 Glendale Road Arcata, California 95521	Project No.	Report Date
	SP-150	4/8/05



GW Flow Direction: SE
GW Gradient: 0.01 ft/ft

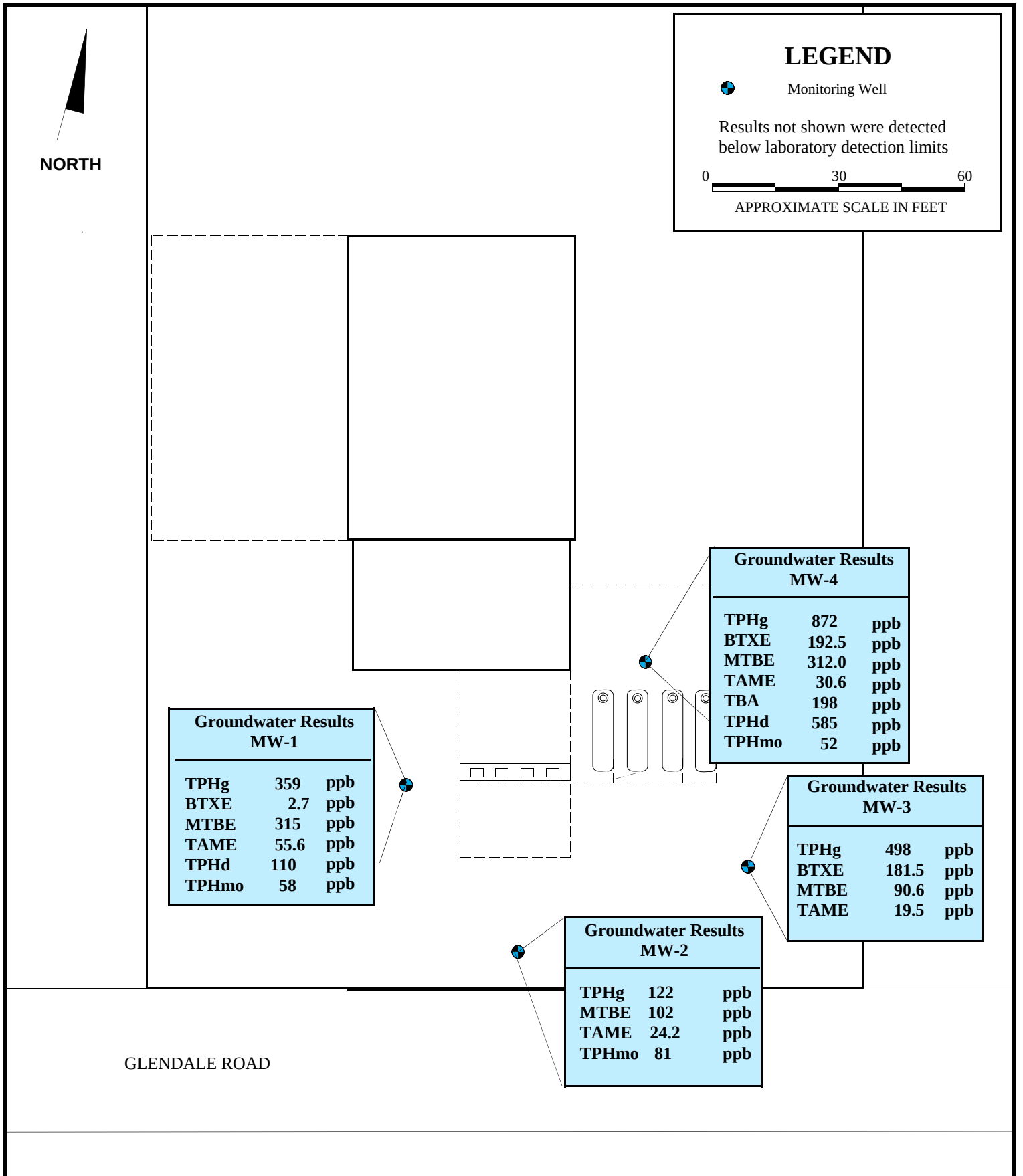
Environmental Services

GROUNDWATER LEVEL CONTOUR MAP JANUARY 2005

Glendale 76
1497 Glendale Road
Arcata, California 95521

Project No.	Report Date
SP-150	4/8/05

Figure 3

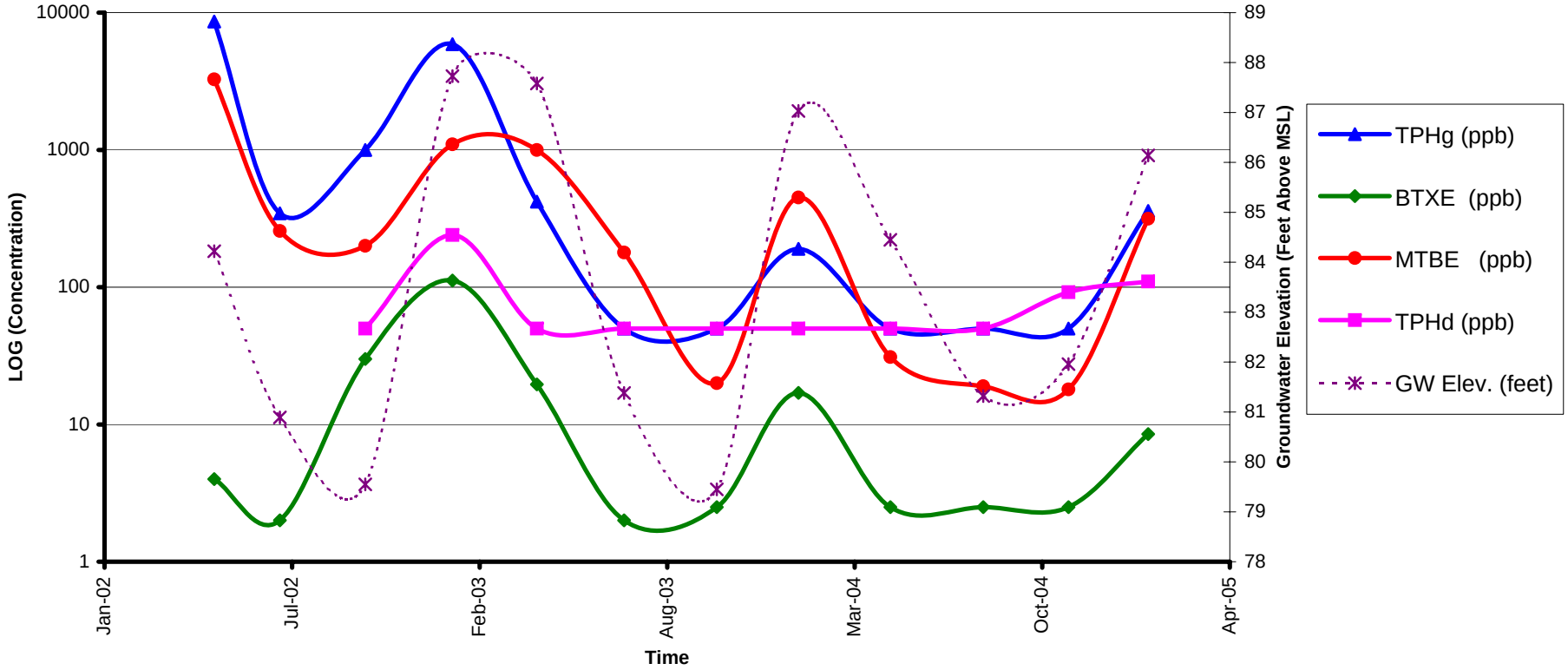


Environmental Services

GROUNDWATER ANALYTICAL RESULTS

Figure 4

Glendale 76 1497 Glendale Road Arcata, California 95521	Project No.	Report Date
	SP-150	4/8/05



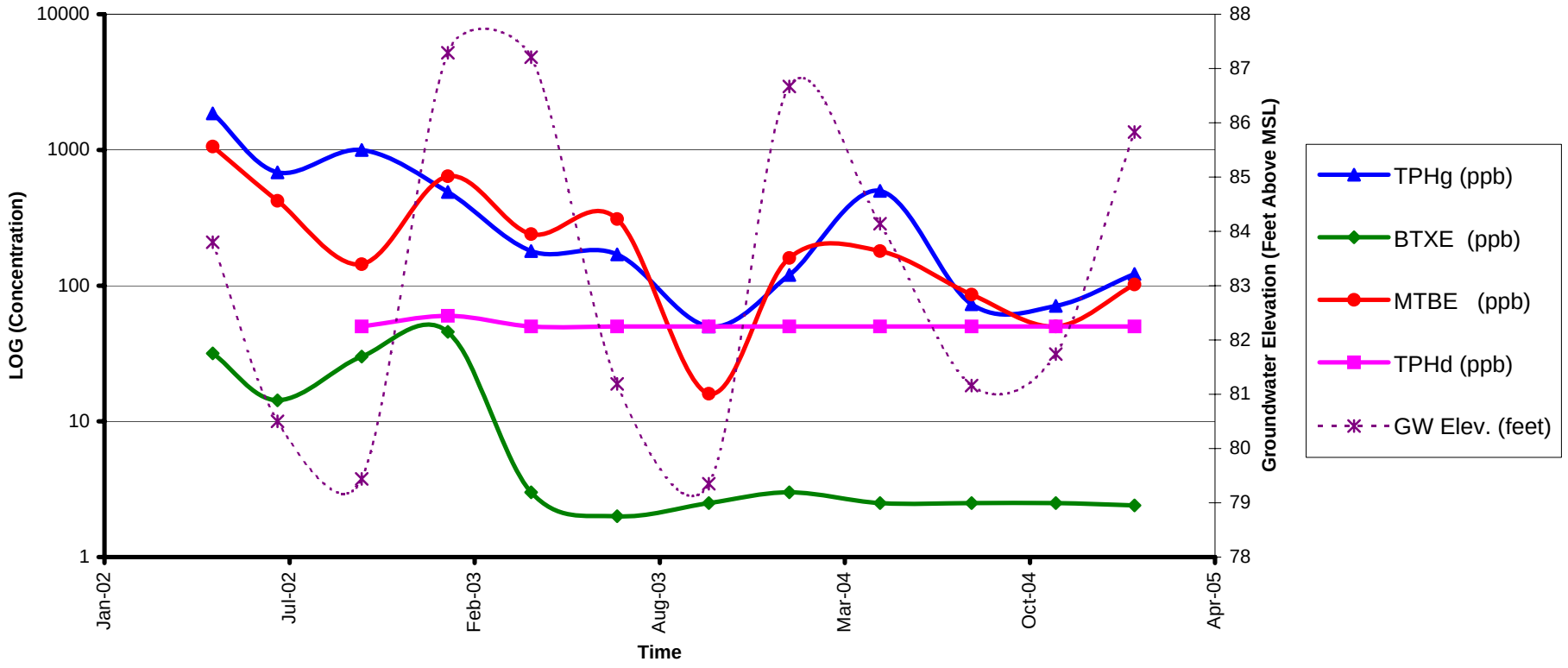
SunPacific Environmental Services
(707) 269-0884

MW-1 HYDROCARBON CONCENTRATIONS VS. TIME

Glendale 76
1497 Glendale Road
Arcata, California 95521

Project No.	Date
SP-150	4/8/2005

Figure 5



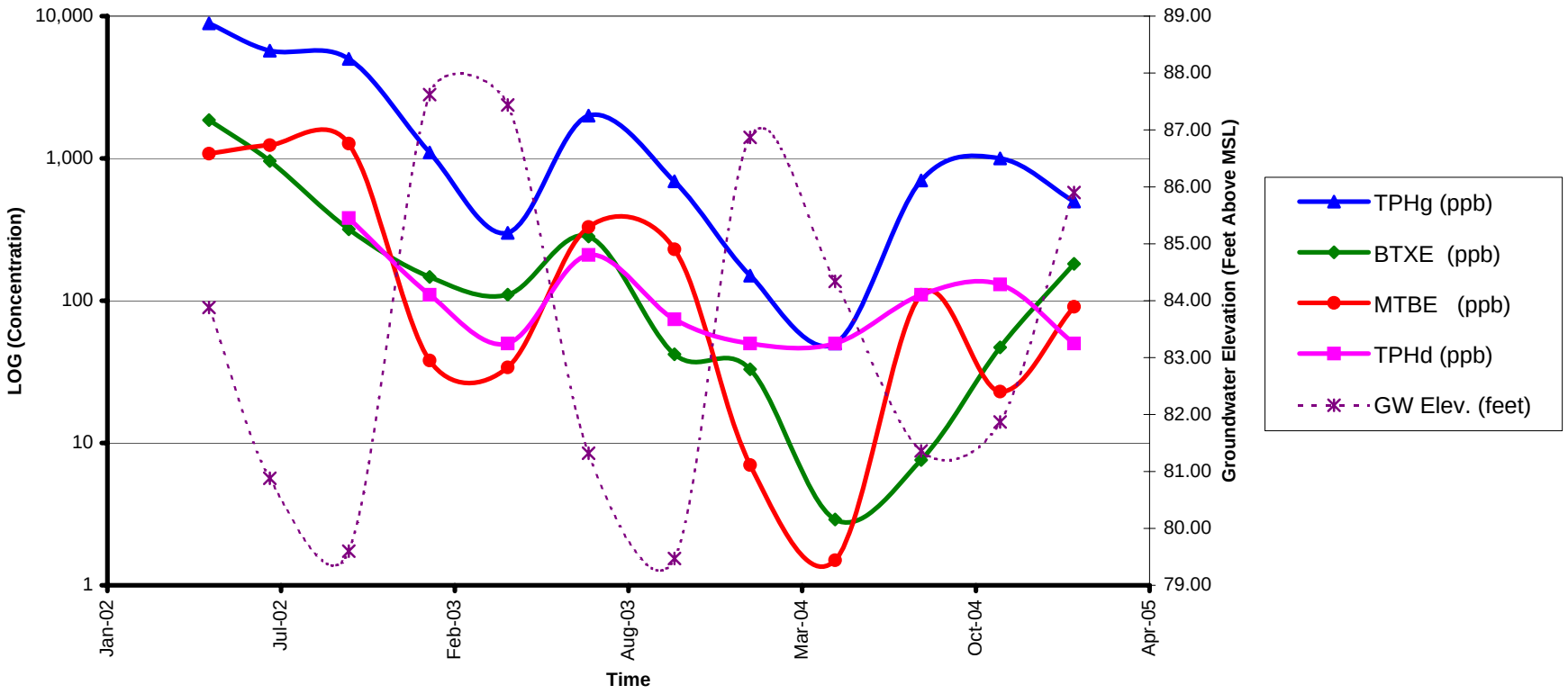
SunPacific Environmental Services
(707) 269-0884

MW-2 HYDROCARBON CONCENTRATIONS VS. TIME

Glendale 76
1497 Glendale Road
Arcata, California 95521

Project No.	Date
SP-150	4/8/2005

Figure 6



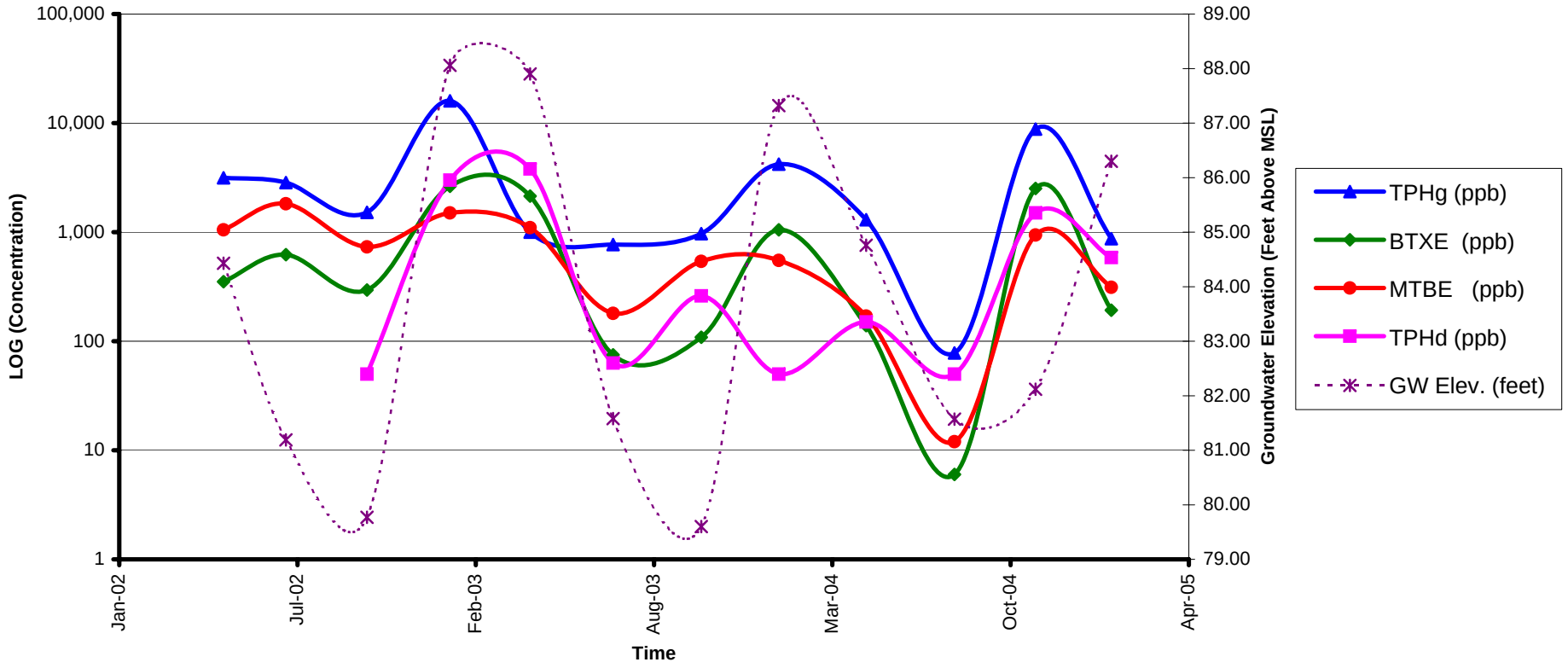
SounPacific Environmental Services
(707) 269-0884

MW-3 HYDROCARBON CONCENTRATIONS VS. TIME

Glendale 76
1497 Glendale Road
Arcata, California 95521

Project No.	Date
SP-150	4/8/2005

Figure 7



SunPacific Environmental Services
(707) 269-0884

MW-4 HYDROCARBON CONCENTRATIONS VS. TIME

Glendale 76
1497 Glendale Road
Arcata, California 95521

Project No.	Date
SP-150	4/8/2005

Figure 8

Appendices

Appendix A

February 09, 2005

Lab ID: 5010830

Jeff Gaines
SOUNPACIFIC
4612 GREENWOOD HEIGHTS DR
KNEELAND, CA 95549
RE: GLENDALE 76 SP-150

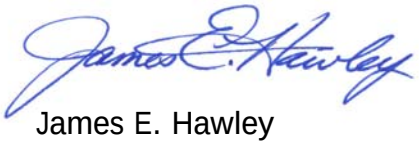
Dear Jeff Gaines,

Enclosed are the analysis results for Work Order number 5010830. All analysis were performed under strict adherence to our established Quality Assurance Plan. Any abnormalities are listed in the qualifier section of this report.

If you have any questions regarding these results, please feel free to contact us at any time. We appreciate the opportunity to service your environmental testing needs.

Sincerely,

For



James E. Hawley
Laboratory Director
California ELAP Certification Number 1677

Report To:	SOUNPACIFIC	**Lab No:**	5010830
	4612 GREENWOOD HEIGHTS DR	**Reported:**	02/09/05
	KNEELAND, CA 95549	**Phone:**	(707) 269-0884
Attention:	Jeff Gaines	**P.O. #**	
Project:	GLENDALE 76 SP-150		
Description:	MW-1	**Lab ID:** 5010830-01	**Sampled:** 01/23/05 00:00
Matrix:	Water		**Received:** 01/27/05 14:00

TPH Gasoline

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Gasoline	ug/l	**359**		6.0	250	EPA 8015/8260	02/01/05	02/01/05	B5B0034
Benzene	"	**2.7**		0.3	2.5	"	"	"	"
Ethylbenzene	"	**0.8**		0.3	2.5	"	"	"	"
Toluene	"	**0.6**		0.2	2.5	"	"	"	"
Xylenes (total)	"	**4.4**		1.0	5.0	"	"	"	"
Methyl tert-butyl ether	"	**315**		0.3	5.0	"	"	"	"
Di-isopropyl ether	"	ND		0.3	2.5	"	"	"	"
Tert-amyl methyl ether	"	**55.6**		0.7	25.0	"	"	"	"
Ethyl tert-butyl ether	"	ND		0.1	25.0	"	"	"	"
Tert-butyl alcohol	"	ND		202	250	"	"	"	"
Surrogate: 4-Bromofluorobenzene		*97.0 %*		*43-155*		*"*	*"*	*"*	*"*

TPH Diesel & Motor Oil

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Diesel	ug/l	**110**		20	50	EPA 8015 MOD	02/03/05	01/27/05	B5A0607
Motor Oil	"	**58**		19	50	"	"	"	"
Surrogate: Octacosane		*86.6 %*		*50-150*		*"*	*"*	*"*	*"*

Approved By

Basic Laboratory, Inc.

California D.O.H.S. Cert #1677

Report To:	SOUNPACIFIC	**Lab No:**	5010830
	4612 GREENWOOD HEIGHTS DR	**Reported:**	02/09/05
	KNEELAND, CA 95549	**Phone:**	(707) 269-0884
Attention:	Jeff Gaines	**P.O. #**	
Project:	GLENDALE 76 SP-150		
Description:	MW-2	**Lab ID:** 5010830-02	**Sampled:** 01/23/05 00:00
Matrix:	Water		**Received:** 01/27/05 14:00

TPH Gasoline

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Gasoline	ug/l	**122**		1.2	50.0	EPA 8015/8260	02/01/05	02/01/05	B5B0034
Benzene	"	ND		0.06	0.5	"	"	"	"
Ethylbenzene	"	ND		0.07	0.5	"	"	"	"
Toluene	"	**0.4**		0.05	0.5	"	"	"	"
Xylenes (total)	"	ND		0.2	1.0	"	"	"	"
Methyl tert-butyl ether	"	**102**		0.6	10.0	"	"	"	"
Di-isopropyl ether	"	ND		0.07	0.5	"	"	"	"
Tert-amyl methyl ether	"	**24.2**		0.1	5.0	"	"	"	"
Ethyl tert-butyl ether	"	ND		0.03	5.0	"	"	"	"
Tert-butyl alcohol	"	ND		40.5	50.0	"	"	"	"
Surrogate: 4-Bromofluorobenzene		*99.0 %*		*43-155*		*"*	*"*	*"*	*"*

TPH Diesel & Motor Oil

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Diesel	ug/l	**32**		20	50	EPA 8015 MOD	02/03/05	01/27/05	B5A0607
Motor Oil	"	**81**		19	50	"	"	"	"
Surrogate: Octacosane		*91.7 %*		*50-150*		*"*	*"*	*"*	*"*

Approved By

Basic Laboratory, Inc.

California D.O.H.S. Cert #1677

Report To:	SOUNPACIFIC	**Lab No:**	5010830
	4612 GREENWOOD HEIGHTS DR	**Reported:**	02/09/05
	KNEELAND, CA 95549	**Phone:**	(707) 269-0884
Attention:	Jeff Gaines	**P.O. #**	
Project:	GLENDALE 76 SP-150		
Description:	MW-3	**Lab ID:** 5010830-03	**Sampled:** 01/23/05 00:00
Matrix:	Water		**Received:** 01/27/05 14:00

TPH Gasoline

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Gasoline	ug/l	**498**		1.2	50.0	EPA 8015/8260	02/01/05	02/01/05	B5B0034
Benzene	"	**102**		0.6	5.0	"	"	"	"
Ethylbenzene	"	**3.4**		0.07	0.5	"	"	"	"
Toluene	"	**7.2**		0.05	0.5	"	"	"	"
Xylenes (total)	"	**68.9**		0.2	1.0	"	"	"	"
Methyl tert-butyl ether	"	**90.6**		0.6	10.0	"	"	"	"
Di-isopropyl ether	"	ND		0.07	0.5	"	"	"	"
Tert-amyl methyl ether	"	**19.5**		0.1	5.0	"	"	"	"
Ethyl tert-butyl ether	"	ND		0.03	5.0	"	"	"	"
Tert-butyl alcohol	"	ND		40.5	50.0	"	"	"	"
Surrogate: 4-Bromofluorobenzene		*96.6 %*		*43-155*		*"*	*"*	*"*	*"*

TPH Diesel & Motor Oil

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Diesel	ug/l	ND		20	50	EPA 8015 MOD	02/03/05	01/27/05	B5A0607
Motor Oil	"	**38**		19	50	"	"	"	"
Surrogate: Octacosane		*89.7 %*		*50-150*		*"*	*"*	*"*	*"*

Approved By

Basic Laboratory, Inc.

California D.O.H.S. Cert #1677

Report To:	SOUNPACIFIC	**Lab No:**	5010830
	4612 GREENWOOD HEIGHTS DR	**Reported:**	02/09/05
	KNEELAND, CA 95549	**Phone:**	(707) 269-0884
Attention:	Jeff Gaines	**P.O. #**	
Project:	GLENDALE 76 SP-150		
Description:	MW-4 **Lab ID:** 5010830-04	**Sampled:**	01/23/05 00:00
Matrix:	Water	**Received:**	01/27/05 14:00

TPH Gasoline

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Gasoline	ug/l	**872**		3.0	125	EPA 8015/8260	02/01/05	02/01/05	B5B0034
Benzene	"	**24.2**		0.2	1.2	"	"	"	"
Ethylbenzene	"	**57.0**		0.2	1.2	"	"	"	"
Toluene	"	**2.3**		0.1	1.2	"	"	"	"
Xylenes (total)	"	**109**		0.5	2.5	"	"	"	"
Methyl tert-butyl ether	"	**312**		1.2	20.0	"	"	"	"
Di-isopropyl ether	"	ND		0.2	1.2	"	"	"	"
Tert-amyl methyl ether	"	**30.6**		0.3	12.5	"	"	"	"
Ethyl tert-butyl ether	"	ND		0.07	12.5	"	"	"	"
Tert-butyl alcohol	"	**198**		101	125	"	"	"	"
Surrogate: 4-Bromofluorobenzene		*99.0 %*		*43-155*		*"*	*"*	*"*	*"*

TPH Diesel & Motor Oil

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Diesel	ug/l	**585**		20	50	EPA 8015 MOD	02/04/05	01/27/05	B5A0607
Motor Oil	"	**52**	D-10	19	50	"	"	"	"
Surrogate: Octacosane		*79.9 %*		*50-150*		*"*	*"*	*"*	*"*

Approved By

Basic Laboratory, Inc.

California D.O.H.S. Cert #1677

Report To:	SOUNPACIFIC	**Lab No:**	5010830
	4612 GREENWOOD HEIGHTS DR	**Reported:**	02/09/05
	KNEELAND, CA 95549	**Phone:**	(707) 269-0884
Attention:	Jeff Gaines	**P.O. #**	
Project:	GLENDALE 76 SP-150		

Notes and Definitions

D-10	The heavy oil range organics present are due to hydrocarbons eluting primarily in the diesel range.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
<	Less than reporting limit
≤	Less than or equal to reporting limit
>	Greater than reporting limit
≥	Greater than or equal to reporting limit
MDL	Method Detection Limit
RL/ML	Minimum Level of Quantitation
MCL/AL	Maxium Contaminant Level/Action Level
mg/kg	Results reported as wet weight
TTLC	Total Threshold Limit Concentration
STLC	Soluble Threshold Limit Concentration
TCLP	Toxicity Characteristic Leachate Procedure

Approved By

Basic Laboratory, Inc.

California D.O.H.S. Cert #1677

BASIC LABORATORY CHAIN OF CUSTODY RECORD

2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX 243-7494

CLIENT NAME: Sour Pacific

PROJECT NAME: Glendale 76

PROJECT #: SP-150

LAB #: 50108,30

ADDRESS: 4612 Greenwood Heights Dr
Kneeland, CA 95549

REQUESTED COMP. DATE: 2-10-05

SAMP: 4

TURN AROUND TIME: STD [X] RUSH [ ]

PAGE 1 OF 1

PROJECT MANAGER: Jeff Gaines

REP: Global

PHONE: 707 269 0884

FAX: 707 269-0699

E-MAIL: Jeff @ sourpacific.com

I.D.# T0602300135

INVOICE TO: SourPacific

PO#:

SYSTEM #:

CUST. SEAL

ICE

SPECIAL MAIL [ ] E-MAIL [ ] FAX [ ] [X] EDT

QC = 1 2 3 4

ANALYSES REQUESTED

DATE	TIME	WATER	COMP	SOIL	SAMPLE DESCRIPTION	# OF BOTTLES	BTEX by 8260	5-oxys	TPHg by 8260	TPHd/mo by 8015	LAB ID	REMARKS
1/23/05		X			"11th Quarterly" MW-1	4	X	X	X	X	1	Please email results to: Jeff @ Sour Pacific.com & Sourpacific @ starband.net & Jeff @ Sourpacific.com
					MW-2	4	X	X	X	X	2	
					MW-3	5	X	X	X	X	3	
					MW-4	5	X	X	X	X	4	
					Note: 2 voa's broken in shipping.				in VOA's			

PRESERVATIONS HNO3 [ ] H2SO4 [ ] NaOH [ ] ZnAce/NaOH [ ] HCL [X] Nathio [ ] [X] ice

SAMPLED BY:	DATE/TIME:	RELINQUISHED BY:	DATE/TIME:
Jeff Gaines	1/23/05		1/24/05
RECEIVED BY:	DATE/TIME:	RELINQUISHED BY:	DATE/TIME:
RECEIVED BY:	DATE/TIME:	RELINQUISHED BY:	DATE/TIME:
RECEIVED BY LAB:	DATE/TIME: 1/27/05 14:00	SAMPLE SHIPPED VIA: (UPS) POST BUS FED-EX OTHER	

INSTRUCTIONS, TERMS, CONDITIONS ON BACK.

Appendix B

SounPacific
Environmental Services
(707) 269-0884

Standard Operating Procedures

Groundwater Level Measurements and Free Phase Hydrocarbon Measurements

All SounPacific staff and contractors shall adopt the following procedures any time that groundwater elevations are determined for the purposes of establishing groundwater gradient and direction, and prior to any sampling event.

Wells are to be tested for free phase hydrocarbons (free product) before the first development or sampling of any new well, and in any well that has historically contained free product.

Equipment Checklist

- ❑ Combination water level / free phase hydrocarbon indicator probe (probe)
- ❑ Gauging Data / Purge Calculations Sheet
- ❑ Pencil or Pen/sharpie
- ❑ Disposable Gloves
- ❑ Distilled Water and or know water source on site that is clean
- ❑ Alconox (powder) or Liquinox (liquid) non-phosphate cleaners—do not use soap!
- ❑ Buckets or Tubs for decontamination station
- ❑ Tools necessary to access wells
- ❑ Site Safety Plan
- ❑ This Standard Operating Procedure
- ❑ Notify Job site business that you will be arriving to conduct work.

Procedure

1. Review Site Safety Plan and utilize personal protection appropriate for the contaminants that may be encountered.

2. Access and open all monitoring wells to be measured. Allow wells to equilibrate for approximately 15 minutes before taking any measurements.

3. Decontaminate probe with Alconox or Liquinox solution, and rinse with distilled water.

4. Determine the diameter of the well to be measured and indicate this on the Gauging Data / Purge Calculations Sheet.

5. Words of caution: Please be careful with water level and product meters probes are not attached with high strength material so please make sure to avoid catching the end on anything in the well and make sure not to wind reel to the point that it could pull on the probe. ***If product is suspect in a well, go to step 6, if no product is suspected go to step 7 below.***

6. **When product is present or suspected:** use the product level meter. Clip the static charge clamp to the side of the well casing. Then lower probe into the well through the product/water interface about one foot if possible. Then slowly raise the probe back up through the product/water interface layer and record the level as the tone changes from solid to broken-record this level in the Gauging Data / Purge Calculations Sheet to the nearest 0.01 foot (DTP). Continue to raise the probe up through the product until the tone stops completely-record this level on the Gauging Data / Purge Calculations Sheet to the nearest 0.01 foot (DTW). Then go to step 8.

7. **When no product is present or suspected:** If no free product is present, record the depth of the water (to the nearest 0.01 foot) relative to the painted black mark on the top of the well casing. Leave the probe in the well just a hair above the water level to ensure the well as equilibrated. As the well rises, the tone will sound. Make sure no increase in water levels have occurred in over a ten-minute period. Water levels can lower as well as rise. Make sure you note when the level you keep lowering the probe to has remained stable for at least ten minutes. Once this has been accomplished, please record this level in the Gauging Data / Purge Calculations Sheet to the nearest 0.01 foot (DTW).

8. Turn off the probe, and use the probe to determine the depth to the bottom of the well relative to the top of the well casing. This is the depth to bottom measurement (DTB).

9. Decontaminate probe and tape by washing in an Alconox/Liquinox solution ***(read directions on solution for ratio of water to cleanser)*** and use the toothbrush provided to remove any foreign substance from the probe and tape. Then triple rinse probe and tape with clean water and then proceed to take measurements in the next well.

10. If sampling is to occur, proceed to implement SounPacific's Standard Operating Procedure for Monitoring Well Purging and Sampling. If no sampling is to be performed, close and secure all wells and caps.

SounPacific
Environmental Services
(707) 269-0884

Standard Operating Procedures

Monitoring Well Purging and Groundwater Sampling

All SounPacific employees and contractors shall adopt the following procedures any time that groundwater samples are to be taken from an existing groundwater monitoring well.

Prior to the implementation of these procedures, the groundwater level **MUST** be measured and the presence of free phase hydrocarbons determined in accordance with SounPacific's Standard Operating Procedures for Groundwater Level Measurements and Free Phase Hydrocarbon Measurements.

Equipment Checklist

- ❑ **Gauging Data / Purge Calculations Sheet used for water level determination**
- ❑ Chain of Custody Form
- ❑ pH/ Conductivity / Temperature meter
- ❑ Pencil or Pen
- ❑ Indelible Marker
- ❑ Calculator
- ❑ Disposable Gloves
- ❑ Distilled Water
- ❑ Alconox/liquinox liquid or powdered non-phosphate cleaner
- ❑ Buckets or Tubs for decontamination station
- ❑ Bottom-filling bailer or pumping device for purging
- ❑ Disposable bottom-filling bailer and emptying device for sampling
- ❑ String, twine or fishing line for bailers
- ❑ Sample containers appropriate for intended analytical method (check with lab)
- ❑ Sample labels
- ❑ Site Safety Plan
- ❑ Tools necessary to access wells
- ❑ Drum space on site adequate for sampling event

Procedure

1. Review Site Safety Plan and utilize personal protection appropriate for the contaminants that may be encountered.

2. Measure groundwater levels and check for the presence of free product in accordance with the Standard Operating Procedures for Groundwater Level Measurements and Free Phase Hydrocarbon Measurements.

Purging

3. Calculate and record the volume of standing water in each well using the information provided on the Gauging Data / Purge Calculations sheet.
   (DTB-DTW) x Conversion Factor = Casing Volume.

4. The purge volume shall be at least three times and no more than seven times the volume of standing water (the casing volume).

5. Purge the well by bailing or pumping water from the well into a calibrated receptacle, such as a five gallon bucket or tub with markings to indicate one gallon increments. Collect purgeate in a 55 gallon labeled drum and store on site. Drum labels should include the date, contents, site number, and SounPacific's name and telephone number.

6. Take measurements of pH, conductivity, temperature, and visual observations to verify the stabilization of these parameters. At least five measurements of these parameters should be made throughout the purging process. The parameters shall be considered stabilized if successive measurements vary by less than 0.25 pH units, 10% of conductivity in μS, and 1°C (or 1.8°F). Continue purging until at least three times the casing volume has been removed, and the measured parameters have stabilized as indicated above. Do not exceed seven casing volumes.

7. Take a final depth to groundwater measurement and calculate the casing volume of the recharged well. Ideally, the casing volume should have recharged to at least 80% of the original measured casing volume before sampling commences. If due to slow recharge rates it is not feasible to wait for the well to fully recharge, then note this on the Gauging Data / Purge Calculation Sheet and proceed to sample following the procedure below.

Sampling

8. **After completing groundwater measurement, and checking for free product if necessary, in accordance with SounPacific's Standard Operating Procedures for Groundwater Level Measurements and Free Phase Hydrocarbon Measurements, and after purging monitoring wells as described above, groundwater samples may be collected.**

9. Slowly lower a clean, previously unused disposable bailer into the well water approximately half of the bailer length, and allow the bailer to slowly fill.

10. Withdraw the full bailer from the monitoring well and utilize the included (clean and unused) bottom-emptying device to fill the necessary sample containers, and seal the container with the included PTFE (Teflon) lined cap.

11. When filling VOAs, fill the VOA completely full, with the meniscus rising above the rim of the bottle. Carefully cap the VOA and invert it and gently tap it to determine whether air bubbles are trapped inside. If the VOA contains air bubbles, refill the VOA and repeat this step.

12. All samples shall be labeled with the Sample ID, the Sample Date, and the Sample Location or Project Number. Use an indelible marker for writing on sample labels.

13. Record all pertinent sample data on the Chain of Custody.

14. Place samples in an ice chest cooled to 4°C with ice or "blue ice". Bottles should be wrapped in bubble wrap, and VOA's should be inserted in a foam VOA holder to protect against breakage. Samples are to be kept at 4°C until delivered to the laboratory. Any transference of sample custody shall be indicated on the Chain of Custody with the appropriate signatures as necessary.

15. Utilize clean, previously unused gloves, bailer and line, and bottom-emptying device for each well sampled.

16. When finished with all sampling, close and secure all monitoring wells.

17. Leave the site cleaner than when you arrived and drive safely.

Appendix C

GAUGING DATA/PURGE CALCULATIONS

Job Site: Glendale 76 Job No.: SP-150

Event: 11th Quarterly Date: 1/23/05

SounPacific Environmental Services
(707) 269-0884

WELL NO.	DIA. (in.)	DTB (ft.)	DTW (ft.)	ST (ft.)	CV (gal.)	PV (gal.)	SPL (ft.)	Bailer Loads	Notes
MW-1	2	19.19	10.33	8.86	1.42	4.26			No sheen detected
MW-2	2	18.90	10.62	8.28	1.32	3.96			No sheen detected
MW-3	2	19.43	10.18	9.25	1.48	4.44			Sheen detected
MW-4	2	19.35	9.97	9.38	1.50	4.50			Sheen detected

Explanation:
DIA. = Well Diameter
DTB = Depth to Bottom
DTW = Depth to Water
ST = Saturated Thickness (DTB-DTW)
CV = Casing Volume (ST x cf)
PV = Purge Volume (standard 3 x CV, well development 10 x CV)
SPL = Thickness of Separate Phase Liquid

Conversion Factors (cf):
2 in. dia. well cf = 0.16 gal./ft.
4 in. dia. well cf = 0.65 gal./ft.
6 in. dia. well cf = 1.44 gal./ft.

Sampler: Jeff Gaines

FILE

RECEIVED 2/1/05

SounPacific
Environmental Services
(707) 269-0884

Well Gauging/Sampling Report

Sheet 1 of 4

Date: 1/23/05 Project Name: Glendale 76 Project No: SP-150 Well Number: MW-1

Analyses Tested: BTEX, 5-oxy's, TPHg, TPH d/mo

Sample Containers: (3) HCl VOA's, (2) 1-L Amber bottles

Purge Technique: ☒ Bailer ☐ Pump

Sounder Used: ☐ Water Meter ☒ Interface Meter

Water & Free Product Levels

Time	Depth to Water	Depth to Product	Notes:
12:18	10.33		NO Sheen
12:32	10.33		↓
	End		

Field Measurements

Time	Total Vol. Removed/(gal)	pH	Temp/(F)	Cond./(ms/cm)	DO/(mg/L)	DO/(%)	
12:49	0	6.70	60.45	.130	1.06	10.7	
12:54	1.42	6.24	60.74	.126	.50	5.1	
12:58	2.84	6.24	60.84	.133	.41	4.2	
1:03	4.26	6.13	60.72	.137	.33	3.3	

Field Scientist: Jeff Gaines

SounPacific
Environmental Services
(707) 269-0884

Well Gauging/Sampling Report

Sheet 2 of 4

Date: 1/23/05 Project Name: Glendale 76 Project No: SP-150 Well Number: MW-2

Analyses Tested: BTEX, 5-oxy's, TPHg, TPHd/mo

Sample Containers: (3) HCl VOA's, (2) 1-L Amber bottles

Purge Technique: [X] Bailer [ ] Pump

Sounder Used: [ ] Water Meter [X] Interface Meter

Water & Free Product Levels

Time	Depth to Water	Depth to Product	Notes:
12:22	10.62		No sheen
12:37	10.62		↓
	End		

Field Measurements

Time	Total Vol. Removed/(gal)	pH	Temp/(F)	Cond./(ms/cm)	DO/(mg/L)	DO/(%)	
1:19	0	5.94	60.78	.134	.59	6.0	
1:23	1.32	5.65	61.30	.155	.34	3.5	
1:28	2.64	5.68	61.31	.162	.27	2.7	
1:32	3.96	5.68	61.36	.165	.25	2.5	

Field Scientist: Jeff Gaines

SunPacific Environmental Services
(707) 269-0884

Well Gauging/Sampling Report

Sheet 4 of 4

Date: 1/23/05 Project Name: Glendale 76 Project No: SP-150 Well Number: MW-4

Analyses Tested: BTEX, 5-Oxy's, TPHg TPHd/mo

Sample Containers: (3) HCl VOA's, (2) 1-L Amber bottles

Purge Technique: ☒ Bailer ☐ Pump

Sounder Used: ☐ Water Meter ☒ Interface Meter

Water & Free Product Levels

Time	Depth to Water	Depth to Product	Notes:
12:29	9.97		Sheen detected
12:44	9.97		↓
	End		

Field Measurements

Time	Total Vol. Removed/(gal)	pH	Temp/(F)	Cond./(ms/cm)	DO/(mg/L)	DO/(%)	
2:08	0	6.06	57.32	.153	.15	1.4	
2:14	1.50	6.18	58.31	.133	.14	1.4	
2:19	3.00	6.13	58.59	.112	.15	1.5	
2:23	4.50	6.10	58.58	.111	.15	1.5	

Field Scientist: Jeff Gaines